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Zeller et al.

(54) METHODS FOR TREATING HEADACHE USING ANTAGONIST ANTIBODIES DIRECTED AGAINST CALCITONIN GENE-RELATED PEPTIDE

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This patent is subject to a terminal dis-

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None

See application file for complete search history.

(56) References Cited

U.S. PATENT DOCUMENTS

4,814,567	A	3/1989	De Angelis et al.
5,116,964	A	5/1992	Capon et al.
5,500,362	A	3/1996	Robinson et al.
5,545,806	A	8/1996	Longberg et al.
5,545,807	Α	8/1996	Surani et al.
5,569,825	A	10/1996	Longberg et al.
5,625,126	A	4/1997	Longberg et al.
5,633,425	A	5/1997	Longberg et al.
5,661,016		8/1997	Longberg et al.
5,750,373	A	5/1998	Garrard et al.
5,821,337	A	10/1998	Carter et al.
5,851,556	A	12/1998	Breton et al.
5,932,215	A	8/1999	De Lacharriere et al.
5,938,586	A	8/1999	De Lacharriere et al.
6,168,809	B1	1/2001	De Lacharriere et al.
6,180,370	B1	1/2001	Queen et al.
6,313,097	B1	11/2001	Eberlein et al.
6,344,438	B1	2/2002	De Lacharriere et al.
6,509,014	В1	1/2003	De Lacharriere et al.
6,521,609	B1	2/2003	Doods et al.
6,586,458	В1	7/2003	Plachetka
(Continued)			

FOREIGN PATENT DOCUMENTS

CN 1308676 5/2001 CN 1671711 9/2005 (Continued)

OTHER PUBLICATIONS

U.S. Appl. No. 13/621,981, filed Sep. 18, 2012, Poulsen et al. U.S. Appl. No. 13/623,206, filed Sep. 20, 2012, Poulsen et al. U.S. Appl. No. 13/835,394, filed Mar. 25, 2013, Zeller et al. U.S. Appl. No. 13/892,121, filed May 10, 2013, Poulsen et al. U.S. Appl. No. 13/892,130, filed May 10, 2013, Zeller et al. U.S. Appl. No. 14/057,747, filed Oct. 18, 2013, Pios et al. U.S. Appl. No. 14/295,583, filed Jun. 4, 2014, Pios et al. (Continued)

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57) ABSTRACT

The invention features methods for preventing or treating CGRP associated disorders such as vasomotor symptoms, including headaches (e.g., migraine, cluster headache, and tension headache) and hot flushes, by administering an anti-CGRP antagonist antibody. Antagonist antibody G1 and antibodies derived from G1 directed to CGRP are also described.

18 Claims, 16 Drawing Sheets